## CLAIMS:

1. A intrinsically gel-free, randomly branched polyamide comprising at least units derived from:

   1. AB monomers, which monomers have both a carboxylic group (A) and an amine group (B),
   2. at least one compound I, being a carboxyulic acid ($A_v$) having a functionality $v \geq 2$ or an amine ($B_w$) having a functionality $w \leq 2$,
   3. at least one compound II, being a carboxylic acid ($A_v$) having a functionality $v \geq 3$ or an amine ($B_w$) having a functionality $w \geq 3$,

   compound II being a carboxylic acid if compound I is an amine or compound II being an amine if compound I is carboxylic acid if compound I is an amine or compound II being an amine if compound I is a carboxylic acid, characterized in that the amounts of units derived from all carboxylic acids and amines in the polyamide satisfy formula a

   $$P < 1 / [(F_A - 1)\ (F_B - 1)] \qquad (1)$$

   where

   $$P = [\Sigma\ (n_i\ f_i)]_X / [\Sigma\ (n_i\ f_i)]_Y \quad (2)$$

   where $P \leq 1$ and either X = A and Y = B, or X = B and Y = A, and

   $$F_x = \Sigma\ (n_i\ f_i^2) / \Sigma(n_i\ f_i)] \qquad (3)$$

   for, respectively, all carboxylic acids (X = A) and all amines (X = B), where $f_i$ is the functionality of either the carboxylic acid ($f_i = v_i$) or amine ($f_i = w_i$), $n_i$ being the number of moles of the carboxylic acid or amine and the summation involving all units derived from carboxylic acids and amines in the polyamide except:

carboxylic acids ($A_v$) having a functionality v and amines ($B_w$) having a functionality w, in the following amounts (in μmol/g of polyamide):

- $B_1$ (20), $B_3$ (60) and $A_2$ (20)
- $B_1$ (10), $B_3$ (60) and $A_2$ (30)
- $B_1$ (120), $B_2$ (30) and $A_3$ (60)
- $B_1$ (150), $B_2$ (30) and $A_3$ (70)
- $B_1$ (170), $B_3$ (30), $A_2$ (60) and $A_3$ (60).

2. The polyamide according to claim 1, the functionality of compound wherein I can be chosen from 2, 3, 4, 5 and 6 and the functionality of compound II can be chosen from 3, 4, 5 and 6.

3. The polyamide according to claim 1, the functionality of wherein compound I is 2 and the functionality of compound II is 3.

4. The polyamide according to claim 3, wherein at least a unit derived from monofunctional carboxylic acid or amine is present.

5. The polyamide according to claim 3, wherein compound I is chosen from the group formed by terephthalic acid and 1, 6-hexa-methylene diamine.

6. The polyamide according to claim 3, wherein compound II is chosen from the group formed by 1, 3, 5-tris (caproic acid) – melamine, trimesic acid and bis (hexamethylene triamine).

7. The polyamide according to claim 1 wherein the AB monomer is an α, ω – amino acid and/or a lactam.

8. The polyamide according to claim 7, wherein the lactam is ς~caprolactam.

9. A process for the preparation of a polyamide film, wherein a polyamide according to claim 1 is chosen as polyamide.

10. A fiber, film, foam or molded article obtained from polyamide according to claim 1.

11. A flat film obtained from a polyamide according to claim 1.